



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------------|------------------|
| 10/738,914 | 12/17/2003 | Charles Stone | 130109.511 | 8358 |
| 500 | 7590 | 04/07/2006 | EXAMINER | |
| SEED INTELLECTUAL PROPERTY LAW GROUP PLLC 701 FIFTH AVE SUITE 6300 SEATTLE, WA 98104-7092 | | | ECHELMAYER, ALIX ELIZABETH | |
| | | ART UNIT | | PAPER NUMBER |
| | | | | 1745 |

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|---------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/738,914 | STONE ET AL. |
| | Examiner | Art Unit |
| | Alix Elizabeth Echelmeyer | 1745 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 December 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-22 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 17 December 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement has been considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews et al. (International Publication Number WO 01/71839) in view of Charnock et al. (US Patent Number 6,902,801).

Andrews et al. teach the combination of 4,4'-dihydroxybiphenyl, 4,4'-dihydroxybenzophenone, 4,4'-difluorobenzophenone, 4,4'-dihydroxydiphenylsulfone, and diphenylsulfone in nearly the exact manner disclosed in the specification of the instant application (p. 47 lines 1-19; page 51 lines 20-25; page 52 lines 1-13). Although Andrews et al. fail to teach the ionomers claimed in the instant application, these ionomers would inherently form under the conditions described by Andrews et al. because the conditions are nearly identical to those in the applicants' specification.

Regarding claims 1, 13, and 14, Andrews et al. fail to teach the use of the membrane created in the membrane electrode assembly of an electrochemical fuel cell or stack.

Charnock et al. teach the use of a composite polymer membrane containing aromatic polymers, polyaramid polymers, and perfluorinated ionomers in a fuel cell (abstract; column 1 lines 39-69; column 2 lines 1-7). Charnock et al. further teach the four compounds disclosed both in the instant application and by Andrews et al. (column 20 lines 56-67; column 21 lines 1-4).

Using the membrane taught by Andrews et al. in the fuel cell of Charnock et al. would be desirable since Charnock et al. teach that ion-conducting materials can be improved using the ion-conducting sulphonated polymer keytones disclosed (column 1 lines 55-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the membrane of Andrews et al. with the fuel cell of Charnock et al. in order to improve the ion-conducting properties of the fuel cell. Further, it takes only ordinary skill in the art to combine multiple fuel cells into a stack to create more power for the desired application.

Further, the ionomers listed would inherently form from the combination of polymers and manner of combination taught by Andrews et al.

Regarding claims 15 and 18-22, Andrews et al. fail to teach the use of the membrane in a membrane electrode assembly in a fuel cell or fuel cell stack as prepared by the method claimed in the instant application.

Charnock et al. teach a fuel cell employing a membrane electrode assembly having an anode, an anode catalyst, an ion-conducting membrane, a cathode catalyst, and a cathode, in that order (Figure 1; column 1 lines 9-44). As discussed above, Charnock et al. teach the improvement of the membrane of a membrane electrode assembly through the use of sulphonated polymer keytones.

The membrane electrode assembly and fuel cell of the instant application can be created through the combination of the membrane of Andrews et al. with the fuel cell of Charnock et al. Further, the fuel cells created by that combination could be formed into a stack to provide the desired power or electricity to a given application. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

It would have been obvious to one having ordinary skill in the art at the time of the invention to create a fuel cell like that of Charnock et al. using the membrane of Andrews et al. in order to improve the ion-conducting properties of the fuel cell.

Regarding claims 2-8 and 16, the varying ratios of the ionomers inherently formed by Andrews et al. can be achieved by varying the amount of each substance in the reaction. Although Andrews et al. fail to teach the ionomers formed by the reaction of the chemicals listed above, altering the combinations in an experimental situation would lead to a desired final product.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the reactants of Andrews et al. and vary the amounts in order to find a desired product.

As for claims 9-12 and 17, Andrews et al. teach that certain combinations of 4,4'-dihydroxybiphenyl, 4,4'-dihydroxybenzophenone, 4,4'-difluorobenzophenone, and 4,4'-dihydroxydiphenylsulfone in the manner described in the applicants' specification will yield the melt viscosities claimed in the instant application (see Tables on pages 48, 52).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER